भारतीय मानक
Indian Standard

IS 17735 : 2021

एल्युमीनिय क्लोरोहाईडरेट — विशिष्टि

Aluminium Chlorohydrate — Specification

ICS 71.060.01

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December 2021 **Price Group 3**

Water Quality for industrial purpose Sectional Committee, CHD 13

FOREWORD

‘This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Water Quality for industrial purpose Sectional Committee had been approved by the Chemical Division Council’.

Aluminium chlorohydrate is synthetically produced from other aluminium compounds and is an inorganic polymer with a general formula of AlnCl3n—m(OH)m. It is manufactured commercially by reacting source of aluminium with hydrochloric acid and various sources of aluminium, such as poly-aluminium chloride, aluminium chloride, aluminium metal etc. can be used as raw material.

It finds ample applications in the area of water treatment and is very commonly used in water and waste management processes. It is capable of removing small particles of impurities and dissolved organic matter. It causes the particles of dirt to coagulate together so that they can be removed from water in an efficient manner.

The composition of committee responsible for the formulation of this standard is given at Annex B.

For the purpose of deciding whether a particular requirement of this standard is complied with the final value, observed or calculated, expressing the result of a test or analysis shall be rounded off in accordance with IS 2 : 1960 ‘Rules for rounding off numerical values (*revised*)’. The number of significant places retained in the rounded of value should be the same as that of the specified value in this standard.

Indian Standard

ALUMINIUM CHLOROHYDRATE

1 SCOPE

This standard prescribes the raw material, requirements, and methods of sampling and test for aluminium chlorohydrate liquid for treatment of water for drinking and other purposes.

2 REFERENCES

The standards listed in Annex A contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards listed Annex A.

3 RAW MATERIALS

Aluminium chlorohydrate is to be manufactured from virgin raw materials (which are not by- products of any industry) so that it is safe for drinking water.

4 REQUIREMENTS

4.1 Description

Aluminium chlorohydrate shall be odourless, almost colourless, clear to slight hazy liquid free of visible sediment and organic contaminants.

4.2 The material shall also comply with the requirements specified in Table 1, when tested by methods specified in col. 4 of Table 1.

5 PACKING, MARKING AND STORAGE

5.1 Packing

The material shall be packed or transported in acid resistant plastic or HDPE or PVC containers or rubber/ plastic lined containers, tankers or tank cars.

5.2 Marking

The packages shall be securely closed and bear legibly and indelibly the following information:

(a) Name of the material;
(b) Name of the manufacturer and address;
(c) Net weight of contents;
(d) Lot number;
(e) Expiry date; and
(f) Hazard Warning Symbols

5.2.1 If the material is supplied in bulk, a card bearing all the information required as mentioned in **5.2** shall be placed with supply.

5.2.2 The container shall also be marked with the following information.

Corrosive liquid, irritating to eyes; in case of contact, rinse immediately with plenty of water and seek medical advice. On contact with skin, wash immediately with plenty of water, immediately take off all the contaminated clothing. Wear suitable gloves and eyes and face protection devices, while handling the material. For details, follow instructions on safety and precautions as per safety data sheet of the manufacturer.

5.2.3 *BIS Certification Marking*

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act,* 2016 and the Rules and Regulations 2018 framed there under, and the products may be marked with the Standard Mark.

5.3 Storage

The material shall be stored in tightly closed container in a cool, dry place away from direct heat. Do not store in unlined metal containers. Avoid contact with oxidizing agents.

6 SAMPLING

Representative samples of the material shall be drawn and their conformity to this standard shall be determined in accordance with method prescribed in Annex T of IS 15573.

Table 1 Requirements For Aluminium Chlorohydrate

(*Clause* 4.2)

Sl No. (1)	**Characteristics** (2)	**Requirements** (3)	**Method of Test** (4)
i)	Aluminium compounds (as Al2O3), percent by mass; *Min*	23	Annex A of 15573 : 2018
ii)	Relative Basicity, percent ; *Min*	82	Annex B of 15573 : 2018
iii)	Chloride (as CI) percent by mass; *Max*	8.5	Annex C of 15573 : 2018
iv)	Specific gravity at 25^{o} C	1.33 – 1.35	Annex E of 15573 : 2018
v)	Mercury (as Hg), ppm; *Max*	0.2	Annex G of 15573 : 2018
vi)	Arsenic (as As), ppm; *Max*	2	Annex H of 15573 : 2018
vii)	Cadmium (as Cd), ppm; *Max*	2	Annex J of 15573 : 2018
viii)	Lead (as Pb), ppm; *Max*	5	Annex K of 15573 : 2018
ix)	Iron (as Fe), ppm; *Max*	50	Annex L of 15573 : 2018
x)	Manganese (as Mn), ppm; *Max*	10	Annex M of 15573 : 2018
xi)	Chromium (as Cr), ppm; *Max*	5	Annex N of 15573 : 2018
xii)	Selenium (as Se), ppm, *Max*	8	Annex P of 15573 : 2018
xiii)	Total Organic Carbon (TOC), ppm; *Max*	80	Annex Q of 15573 : 2018
xiv)	Water insoluble, percent by mass; *Max*	0.1	Annex R of 15573 : 2018
xv)	*p*H of 5 percent aqueous solution, w/v; *Min*	4.0	Annex S of 15573 : 2018
xvi)	Turbidity, NTU; *Max*	50	*See Note 1*
xvii)	Nickel (as Ni), ppm; *Max*	5	IS 3025 (Part 54)
xviii)	Dynamic viscosity at 20^{0}C, mPa	10-50	IS 9316 (Part 2) and IS 6213 (Part 4)

NOTE — By following the method given by manufacturer of the turbidity meter, standardize the instrument with solutions of standard turbidity. Shake sample well before transferring it to cell and measure turbidity in the instrument while using deionized filtered water in the blank cell (weigh 3g of sample for this test).

ANNEX A

(*Clause* 2)

LIST OF REFERED INDIAN STANDARDS

IS No.	*Title*
3025 (Part 54) : 2003	Methods of sampling and test (physical and chemical) for water and wastewater: Part 54 Nickel (*first revision*)
6213 (Part 4) : 1971	Methods of test for pulp: Part 4 Determination of viscosity of pulp
9316 (Part 2) : 1987	Methods of test for rubber latex: Part 2 Determination of viscosity (Rl:2) (*first revision*)
15573 : 2018	Polyaluminium chloride (*first revision*)

ANNEX B

(*Foreword*)

COMMITTEE COMPOSITION

Water Quality for industrial purpose Sectional Committee, CHD 13

Organization	*Representative(s)*
Bhabha Atomic Research Centre, Mumbai	Shri K. P. Bhattacharyya (***Chairman***)
Bhabha Atomic Research Centre, Mumbai	Shri Shivayyanamath S. Shri T. K. Dey (*Alternate*)
Bharat Heavy Electrical Limited, Thiruchirapali	Dr S. Bhatnagar K. Ananda Babu (*Alternate* I) Dr A. Lawrence (*Alternate* II)
Central Ground Water Board, Faridabad	Dr Neelam Nigam Shrimati Pooja Mehrotra (*Alternate*)
Central Leather Research Institute, Chennai	Dr C. Muralidharan Shri R. Suthanthararajan (*Alternate*)
Central Pollution Control Board, New Delhi	Dr S. D. Makhijani Dr R. C. Trivedi (*Alternate*)
Central Pulp and Paper Research Institute, Sharanpur	Dr Reeta Tandon Dr S. Thapiyal (*Alternate*)
Central Salt and Marine Chemicals Research Institute, Bhavnagar	Dr Soumya Haldar Dr D. N. Srivastava (*Alternate*)
Confederation of Indian Industry, New Delhi	Shri D. S.Chadha
Consumer education and Research Centre, Ahmedabad	Ms Anindita Mehta Ms Dolly Jain (*Alternate*)
Chennai Petroleum Corporation Ltd,Chennai	Nomination Awaited
CECRI, Karaikudi	Nomination Awaited
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Department of Science and Technology, New Delhi	Nomination Awaited
Davey Products	Nomination Awaited
Delhi Jal Board	Nomination Awaited
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Ion Exchange India Limited, Mumbai	Shri Sachin Saha Dr. Renu Saraph (*Alternate*)
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Maharashtra State Electricity Board, Chandrapur	Shri V. P. Ghodmare Shri Rajesh Dattatraya Chivane (*Alternate*)
Ministry of Drinking Water and Sanitation, New Delhi	Shri R. M. Desphande
Ministry of Urban Development and Poverty Alleviation, New Delhi	Shri Sukanta Kar

Organization	*Representative(s)*
National Environment Engineering Research Institute, Nagpur	Dr Pawan Labhasetwar Er S. P. Andey (*Alternate*)
NLC Nalco India Limited, Kolkata	Dr Ashish Kumar Samaddar Shri Nadan Chatterji (*Alternate*)
NTPC Limited, New Delhi	Shri B. Bhattacharya Shri Sharat Kumar (*Alternate*)
Padarsh Pharmaceuticals Private Limited, Mumbai	Shri Muneesh Chadda Shri S. Y. Pandit (*Alternate*)
Reliance Industries, Mumbai	Nomination Awaited
Rochem India, Mumbai	Nomination Awaited
Shriram Institute for Industrial Research, Delhi	Dr V. K. Verma Ms Manjeet Aggarwal (*Alternate*)
The Energy and Resource Institute, New Delhi	Shri Anshuman Dr Suneel Pandey (*Alternate*)
The Fertilizer Association of India, New Delhi	Shri Manish Goswami Shri N. R. Kamat (*Alternate*)
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CII-Triveni Water Institute	Executive Director
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In personal capacity	Dr S. Prabhakar
Inpersonal capacity	Dr T. S. Kathpal
In personal capacity	Shri D. K. Jain
In personal capacity	Dr A. Lawrence
In personal capacity	Shri B. Bhattacharya
In personal capacity	Shri Sharat Kumar
In personal capacity	Shri R. S. Baghel
BIS Directorate General	Shri A. K. Lal, Scientist 'E' and Head (CHD) [Representing Director General (*Ex-officio*)]

Member Secretary

Shubhanjali Umrao
Scientist 'B' (CHD), BIS

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